UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,627	03/01/2004	Brad N. Mathiowetz	P32.12-0022	1342

27367 7590 10/27/2010

WESTMAN CHAMPLIN & KELLY, P.A.
SUITE 1400
900 SECOND AVENUE SOUTH
MINNEAPOLIS, MN 55402

EXAMINER	
CHUO, TONY SHENG HSIANG	
ART UNIT	PAPER NUMBER
1729	

MAIL DATE	DELIVERY MODE
10/27/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/790,627	MATHIOWETZ ET AL.	
	Examiner	Art Unit	
	Tony Chuo	1729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 October 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☒ Claim(s) *1 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/4/10 has been entered.

Response to Amendment

2. Claims 1-8 are currently pending. Claims 9-35 are cancelled. The previous objection to claims 1, 9, and 24 is withdrawn. The amended claims do not overcome the previously stated 103 rejections of claims 1-8. In addition, claims 1-8 are rejected under the following new 112 rejection. Therefore, upon further consideration, claims 1-8 are rejected under the following 112 and 103 rejections.

Claim Objections

3. Claim 1 is objected to because of the following informalities: the phrase “an on” in line 13 should be deleted. Appropriate correction is required.

4. Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 1 already recites a first layer comprising two thermally conductive half-shells that each enclose one side of a round surface of the energy storage cell.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "each half shell comprising: … a second layer of thermally insulating material …" is not supported by the specification. The specification discloses that "a first layer of material 34, 36 has a high specific heat capacity and is thermally conductive. The first layer of material includes a first half shell 34 and a second half shell 36" (pg. 5, lines 23-27). However, the specification does not disclose a second layer of thermally insulating material that also comprises first and second half shells.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Izaki et al (US 2002/0113685), and further in view of Maggert et al (US 6724170).

Regarding claim 1, the Stafford reference discloses a battery pack comprising: a plurality of battery cells "22" wherein the battery cells are elongate and aligned parallel and side by side (Fig. 5); a plurality of electrical contacts "34" (electrical leads) that are capable of coupling the battery cells to an intrinsically safe hand held instrument (col. 4, lines 9-10); wherein housing support "26" comprising two split shell segments "26a" and "26b" (first and second half shells) that contacts the cylindrical surface of the battery cells, wherein the split shell segments have a gap therebetween that is capable of allowing thermal expansion of the split shell segments (Fig. 1 and col. 4, lines 31-33); wherein housing support "26" comprises: a first heat-conductor layer "42" (thermally conductive material) that is shaped to conform to a cylindrical portion of the outer surface of the battery cells, terminates at first layer ends that are on the cylindrical portion of the outer surface of the battery cell, and has a thickness of 0.04 inches and a thermal conductivity of 193 Watts/meter-°K (col. 4, line 56 to col. 5, line 18 and Fig. 4); and a second structural support outer layer "48" (thermally insulating material) that is

shaped to conform to an outer surface of the first heat-conductor layer, contacts all of the outer surface of the first heat-conductor layer, extends beyond the outer surface to enclose the first layer ends, defines an exterior surface of the enclosure of the battery cells which separates the battery pack from the environment, and has a thickness of 0.020 inches and a second value of thermal conductivity (col. 5 lines 23-26 and Fig. 4).

Examiner's note: the recitation "for an intrinsically safe hand held portable instrument in an industrial process control system" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

In addition, it is well known in the art that battery cells in a battery pack are connected to one another with a plurality of electrical interconnects. For example, Maggert et al (US 6724170) discloses electrical interconnects "110" that connect adjacent cells "101"-"104".

Further, it is the position of the examiner that a temperature of the outer surface of the second layer that is less than 130°C during an electrical short circuit condition of the cells is an inherent property of a battery cell that has a first layer of thermally conductive material that is shaped to conform to a cylindrical portion of an outer surface of the battery cell and a second layer of thermally insulating material that is shaped to

form an enclosure of an outer surface of the first layer. In addition, the Stafford battery pack is also an intrinsically safe equipment because of the inherent properties of the battery housing support.

However, Stafford et al does not expressly teach a protective device including a fusible link coupled to a connected lead and the electrical energy storage cells which is encased in potting compound (claim 1). The Izaki reference discloses a battery pack comprising: a plurality of batteries and a protective device including a fusible metal “16” (fusible link) coupled to a terminal "4" (connected lead) and the batteries, wherein the fusible metal is encased in a cover film “18” (potting compound) (Fig. 9 and 13 and paragraphs [0206],[0211]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford battery pack to include a protective device including a fusible link coupled to a connected lead and the electrical energy storage cells which is encased in potting compound in order to prevent overheating of the battery during short circuiting by utilizing a fusible metal to break the circuit, thereby assuring safety of the battery.

However, Stafford et al as modified by Izaki et al does not expressly teach a plurality of elongated separation bars positioned between adjacent electrical energy storage cells and between the plurality of electrical interconnects to reduce shorting and provide mechanical support (claim 1). The Maggert reference discloses a plurality of plastic casings “202”, “501”, “502” (elongated separation bars) positioned between the

adjoining cells and between the plurality of electrical interconnects “110” to prevent shorting (col. 3 line 66 to col. 4 line 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Izaki battery pack to include a plurality of elongated separation bars positioned between adjacent electrical energy storage cells and between the plurality of electrical interconnects to reduce shorting and provide mechanical support in order to improve the safety of the battery by preventing the tabs from shorting to either tabs or other cell housings.

9. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Izaki et al (US 2002/0113685) and Maggert et al (US 6724170) as applied to claim 1 above, and further in view of Dansui et al (US 2003/0013009).

However, Stafford et al as modified by Izaki et al and Maggert et al does not expressly teach a first layer of material that comprises aluminum or copper. The Dansui reference discloses a battery housing that is made of aluminum or copper (paragraph [0013]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Izaki/Maggert battery housing support to include a first layer of material that comprises aluminum or copper in order to utilize a material that has excellent thermal conduction properties and is suited for suppressing a battery temperature rise.

10. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Izaki et al (US 2002/0113685) and Maggert et al (US 6724170) as applied to claim 1 above, and further in view of Toyoda (JP 2001-243927).

However, Stafford et al as modified by Izaki et al and Maggert et al does not expressly teach a second layer of material that comprises heat-shrink tubing or elastic material. The Toyoda reference discloses a heat shrink member "8" that is also an elastic material that covers a battery (paragraph [0008]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Izaki/Maggert battery housing support to include a second layer of material that comprises heat-shrink tubing or elastic material in order to improve the reliability of the outer package of the battery while preventing the generation of an outside short circuit.

Response to Arguments

11. Applicant's arguments filed 10/4/10 have been fully considered but they are not persuasive.

The applicants argue that Stafford indicates that layer 48 may be of the same material as heat conductive layer 42 (see col. 5, lines 27-30). Therefore, Stafford teaches away from the claimed invention in which the outer layer is a thermally insulating layer.

In response, the examiner disagrees that Stafford teaches away from the claimed invention in which the outer layer is a thermally insulating layer. Stafford discloses a structural support outer layer 48 that is a composite material, preferably comprising structural fibers embedded in a polymeric matrix 52. It is well known in the art that a polymeric matrix is inherently a thermally insulating material.

The applicants further argue that amended independent claim 1 describes first and second half shells which are positioned on opposing sides of the plurality of electrical storage cells. This is not shown in Stafford in which the half shells only cover a single battery cell rather than a plurality.

In response, the examiner would like to point out that the present invention discloses first and second half shells that only cover a single battery cell of a plurality of battery cells.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on (571) 272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Ula C Ruddock/
Supervisory Patent Examiner, Art Unit 1795